Exhibit 5

Copy of the Confidential, and Non-Publicly Disclosed First Working Draft (7-22-98) of IEC 61966-2-2:'Colour Measurement and Management in Multimedia Systems and Equipment-Part 2-2: Extended Precision RGB Colour Space'

(8 pages)

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

TECHNICAL COMMITTEE NO. 100: AUDIO, VIDEO AND MULTIMEDIA SYSTEMS AND EQUIPMENT

Project Team 61966: Colour Measurement and Management in Multimedia Systems and Equipment

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First Working Draft IEC 61966-2-2: Colour measurement and management in multimedia systems and equipment - Part 2-2: Extended precision RGB colour space

Based on the discussion and decision of the 4th PT 61966 meeting in Derby on 1998-05-14/15 as reported by 100/PT61966(PL)28, co-project leader, Mr. Michael Stokes who is responsible to develop a series of International Standards for Part 2 of IEC 61966, the project leader received his contribution on 1998-07-21. The draft is annexed to this document as the 1st working draft for discussion and comments within PT 61966 for the time being.

The Part 2-2 of IEC 61966 is a proposed work item and worked as stage 0 till it will become an approved new work item. For official approval of the National Committees, an new work item is expected from the USNC for vote.

This document together with possible comments or further revised document taking into account the received comments will be discussed at the next physical meeting of PT 61966 in Houston, AZ, U.S.A. to be held on 1998-10-14.

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COLOUR MANAGEMENT IN MULTIMEDIA SYSTEMS
- Part 2: Colour Management,
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FOREWORD

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International Standard IEC 61966 has been prepared by project team 61966: Colour measurement and management in multimedia systems and equipment, of IEC technical committee TC100: Audio, Video and Multimedia Systems and Equipment.

The text of this standard is based on

FDIS	Report on voting
XXX/FDIS	XXX/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

INTERNATIONAL ELECTROTECHNICAL COMMISSION

COLOUR MANAGEMENT IN MULTIMEDIA SYSTEMS
- Part 2: Colour Management,
Part 2-2: EXTENDED PRECISION RGB COLOUR SPACE

1 GENERAL

1.1 Introduction

The method of digitisation in this part is designed to complement current sRGB-based colour management strategies by explicitly defining the encoding methods for extended precision beyond 8 bits per channels.

Since this standard is a simple extension of the sRGB standard (61966-2-1), the same reference conditions are shared by both standards.

1.2 Scope

The IEC 61966 standards are a series of methods and parameters for colour measurements and management for use in multimedia systems and equipment applicable to the assessment of colour reproduction.

This part of IEC 61966 is applicable to the encoding and communication of greater than 8-bit precision RGB colours used in computer systems and similar applications by defining encoding transformations for use in defined reference conditions. The encoding transformations are the default RGB colour definition when no other colour space information is available or appropriate.

If actual conditions differ from the reference conditions, additional rendering transformations could be required. Such additional rendering transformations are beyond the scope of this standard.

1.3 Normative References

The following normative documents contain provisions, which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All normative documents are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. Members of IEC and ISO maintain registers of currently valid International Standards

IEC 61966-2-1: 199x, *COLOUR MANAGEMENT IN MULTIMEDIA SYSTEMS - Part 2: Colour Management, Part 2-1: DEFAULT RGB COLOUR SPACE – sRGB*

ITU-R BT.709-2: 1995, *Parameter Values for the HDTV Standards for Production and International Programme Exchange*

1.4 Definitions

For the purpose of this International Standard, the following definitions apply. Definitions of illuminance, luminance, tristimulus, and other relating lighting terms are defined in reference IEC 60050(845).

2 REFERENCE CONDITIONS

The reference display, viewing and observer conditions are identical to those defined in IEC 61966-2-1.

3 ENCODING CHARACTERISTICS

3.1 Introduction

The encoding transformations between 1931 CIEXYZ values and greater than 8-bit RGB values provide unambiguous methods to represent optimum image colorimetry when viewed on the reference display in the reference viewing conditions by the reference observer. The 1931 CIEXYZ values are scaled such as the sRGB black point to white point luminance is 0.0 to 1.0, not 0.0 to 100.0. These non-linear sR'G'B' values represent the appearance of the image as displayed on the reference display in the reference viewing condition. Values less than 0.0 in CIEXYZ space represent colours darker than black in the reference conditions. Values greater than 1.0 represent values brighter than white in the reference conditions.

3.2 Transformation from greater than 8-bit RGB values to 1931 CIE XYZ values

The relationship is defined as follows:

$$\begin{aligned} R'_{sRGB} &= R_{8bit} \div 65535{,}0 \\ G'_{sRGB} &= G_{8bit} \div 65535{,}0 \\ B'_{sRGB} &= B_{8bit} \div 65535{,}0 \end{aligned} \qquad (1)$$

If $-0{,}25 \le R'_{sRGB}, G'_{sRGB}, B'_{sRGB} < -0{,}16693$

$$\begin{aligned} R_{sRGB} &= -\left(\left[\left(R'_{sRGB} + 0{,}055\right) \Big/ 1{,}055\right]^{2{,}4}\right) \Big/ 4 \\ G_{sRGB} &= -\left(\left[\left(G'_{sRGB} + 0{,}055\right) \Big/ 1{,}055\right]^{2{,}4}\right) \Big/ 4 \\ B_{sRGB} &= -\left(\left[\left(B'_{sRGB} + 0{,}055\right) \Big/ 1{,}055\right]^{2{,}4}\right) \Big/ 4 \end{aligned} \qquad (2)$$

If $-0.16693 \le R'_{sRGB}, G'_{sRGB}, B'_{sRGB} \le 0{,}04045$

$$\begin{aligned} R_{sRGB} &= R'_{sRGB} + 12{,}92 \\ G_{sRGB} &= G'_{sRGB} + 12{,}92 \\ B_{sRGB} &= B'_{sRGB} \div 12{,}92 \end{aligned} \qquad (3)$$

else $R'_{sRGB}, G'_{sRGB}, B'_{sRGB} > 0{,}04045$

$$R_{sRGB} = \left[\left(R'_{sRGB} + 0,055 \right) / 1,055 \right]^{2,4}$$
$$G_{sRGB} = \left[\left(G'_{sRGB} + 0,055 \right) / 1,055 \right]^{2,4} \quad (4)$$
$$B_{sRGB} = \left[\left(B'_{sRGB} + 0,055 \right) / 1,055 \right]^{2,4}$$

and

$$\begin{bmatrix} X \\ Y \\ Z \end{bmatrix} = \begin{bmatrix} 0,4124 & 0,3576 & 0,1805 \\ 0,2126 & 0,7152 & 0,0722 \\ 0,0193 & 0,1192 & 0,9505 \end{bmatrix} \begin{bmatrix} R_{sRGB} \\ G_{sRGB} \\ B_{sRGB} \end{bmatrix} \quad (5).$$

3.3 Transformation from 1931 CIE XYZ values to greater than 8-bit RGB values

The sRGB tristimulus values can be computed using the following relationship:

$$\begin{bmatrix} R_{sRGB} \\ G_{sRGB} \\ B_{sRGB} \end{bmatrix} = \begin{bmatrix} 3,2406 & -1,5372 & -0,4986 \\ -0,9689 & 1,8758 & 0,0415 \\ 0,0557 & -0,2040 & 1,0570 \end{bmatrix} \begin{bmatrix} X \\ Y \\ Z \end{bmatrix} \quad (6)$$

The sRGB tristimulus values are transformed to non-linear sR'G'B' values as follows:

If $-0,25 \leq R_{sRGB}, G_{sRGB}, B_{sRGB} > -0,01292$

$$R'_{sRGB} = -\left[1,055 \times \left(-4 R_{sRGB} \right)^{(1,0/2,4)} - 0,055 \right] / 4$$
$$G'_{sRGB} = -\left[1,055 \times \left(-4 G_{sRGB} \right)^{(1,0/2,4)} - 0,055 \right] / 4 \quad (7)$$
$$B'_{sRGB} = -\left[1,055 \times \left(-4 B_{sRGB} \right)^{(1,0/2,4)} - 0,055 \right] / 4$$

else if $-0,01292 \leq R_{sRGB}, G_{sRGB}, B_{sRGB} < 0,0031308$

$$R'_{sRGB} = 12,92 \times R_{sRGB}$$
$$G'_{sRGB} = 12,92 \times G_{sRGB} \quad (8)$$
$$B'_{sRGB} = 12,92 \times B_{sRGB}$$

else $0,0031308 \leq R_{sRGB}, G_{sRGB}, B_{sRGB} \leq 1,33$

$$R'_{sRGB} = 1,055 \times R_{sRGB}^{(1,0/2,4)} - 0,055$$
$$G'_{sRGB} = 1,055 \times G_{sRGB}^{(1,0/2,4)} - 0,055 \quad (9)$$
$$B'_{sRGB} = 1,055 \times B_{sRGB}^{(1,0/2,4)} - 0,055$$

The non-linear sR'G'B' values are converted to digital code values. This standard specified a black digital count of 0 and a white digital count of 65535 for 48-bit (16-bits/channel) encoding. The resulting RGB values are formed according to the following equations:

$$
\begin{aligned}
R_{16bit} &= ((65535{,}0 - 0{,}0) \times R'_{sRGB}) + 0{,}0 \\
G_{16bit} &= ((65535{,}0 - 0{,}0) \times G'_{sRGB}) + 0{,}0 \\
B_{16bit} &= ((65535{,}0 - 0{,}0) \times B'_{sRGB}) + 0{,}0
\end{aligned}
\tag{11}
$$

ANNEX A
(informative)
sYCC and ITU-R BT.709-2 Compatibility

The compatibility between this standard and the ITU-R BT.709-2 was a primary consideration in development of this standard. Unfortunately, ITU-R BT.709-2 can be somewhat confusing. This annex is an attempt to clarify and reduce this confusion.

In April 1990 unanimous worldwide agreement on a calibrated non-linear RGB space for HDTV production and program exchange in ITU-R BT.709-2 was obtained. It specifies the encoding of real world scene tristimulus values into a reference display RGB colour space assuming a dark viewing condition. The ITU specification is rather vague on defining the reference display. This sRGB standard provides a clear and well-defined reference display for ITU-R BT.709-2 for a dim viewing environment.

ITU-R BT.709-2 specifically describes the encoding transfer function for a video camera that when viewed on a "standard" display will produce excellent image quality. The implicit target of the ITU encoding is a standard video display whose transfer function is *not* explicitly delineated. Instead a typical display setup is assumed. This sRGB standard attempts to explicitly describe a standard display characterisation that is compatible with ITU-R BT.709-2.

This is illustrated in figures 1-3 below. Figure 1 is directly derived from ITU-R BT.709-2

This sRGB standard essentially defines the second part of this transformation between the reference RGB display space and the display CIEXYZ tristimulus values in a dim viewing environment.

Annex F
(informative)
Bibliography

"A Standard Default Colour Space for the Internet: sRGB" Michael Stokes, Matthew Anderson, Srinivasan Chandrasekar, and Ricardo Motta, http://www.w3.org/Graphics/Color/sRGB.html